**United States
Department of
Agriculture**

Service Center
Modernization Initiative
(SCMI)

STANDARD

Geospatial Dataset File Metadata

DRAFT

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Prepared by:
Data Management Team

Introduction

The Service Center Initiative (SCI) Data Management Team #5: Geospatial Data Standards developed the August 1999 version of the *Standard for Geospatial Data Set Metadata* to guide data producers and data stewards in the proper documentation of metadata for geospatial data sets that fall within the domain of their responsibilities. This standard has been updated by the Geospatial Metadata Team to describe the required metadata elements that shall be collected for data sets produced under the SCI.

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Figure 1 — Working group list

RECORD OF CHANGE

Revision/Change Number	Update Number	Date of Change	Description/Reason for Change	Pages/Sections Affected
2	1	28-May-03	Revision of 31-Aug-99 SCI Std 004-01	All
3	1	15-Oct-03	Use IO Lab template	All

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STANDARD FOR GEOSPATIAL DATASET METADATA

1.   Overview

This standard provides guidance for collecting and managing metadata for all geospatial data sets produced by the United States Department of Agriculture (USDA) Service Center Agencies (SCA). Members of the Geospatial Metadata Team, sponsored by the Data Management Team (DMT) are available for technical assistance and guidance during the application of this standard. This document provides complete descriptions for each of the minimum mandatory metadata elements, acceptable domain values where appropriate, and examples relevant to the application of this standard for geospatial data sets produced within the SCI.

1.1.   Scope

The scope of this standard identifies each of the minimum metadata elements that shall be collected for geospatial data sets. This document discusses the role of the Federal Geographic Data Committee (FGDC) in the development of this standard and how the SCA will accommodate new standards and their subsequent implementation. The standard identifies required metadata elements and provides a complete description of each in section 4. Harmonization with International Standards Organization (ISO) standards is expected in the future.

1.2.   Purpose

The purpose of this standard is to document the minimum mandatory metadata elements that shall be collected for all data sets produced for use under the USDA Service Center Initiative (SCI). This standard serves as a reference tool for persons responsible for the collection and management of metadata. Adherence to this standard is necessary to ensure that all geospatial data sets produced and maintained within the SCI are, at a minimum, documented to a consistent and manageable level of detail.

This consistent documentation is necessary to provide access to geospatial data sets for users within and outside of the SCI. A common set of elements allows the metadata to be included into national programs charged with tracking and maintaining geospatial data sets. Metadata includes information about the geospatial data set such as identification information, contact information, details concerning the quality and spatial extent of the data, and information concerning availability and distribution, spatial reference, data quality, and production rules. This information allows users to determine the fitness of the data set for their application.

1.3.   Acronyms and abbreviations

ASPRS American Society for Photogrammetry and Remote Sensing
CSDGM   Content Standard for Digital Geographic Metadata
DMT   Data Management Team
DOQ   Digital Orthophoto Quadrangle
DOQQ   Digital Orthophoto Quarter Quadrangle
FGDC   Federal Geographic Data Committee
GMT   Geospatial Metadata Team

GIS	Geographic Information System
GPS	Global Positioning Systems
HTML	Hyper Text Markup Language
ISO	International Standards Organization
NAD	North American Datum
NSDI	National Spatial Data Infrastructure
NSSADA	National Standards for Spatial Data Accuracy
RMSE	Root Mean Square Error
SCA	Service Center Agencies
SCI	Service Center Initiative
SPCS	State Plane Coordinate System
USDA	United States Department of Agriculture
UTM	Universal Transverse Mercator
XML	eXtensible Markup Language

2.   Background

Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," was signed on April 11, 1994, by President Clinton. Section 3, Development of a National Geospatial Data Clearinghouse, paragraph (b) states: "Standardized Documentation of Data, ... each agency shall document all new geospatial data it collects or produces, either directly or indirectly, using the standard under development by the Federal Geographic Data Committee (FGDC), and make that standardized documentation electronically accessible to the Clearinghouse network."

2.1.   Federal Geographic Data Committee (FGDC)

The current de facto standard for digital geospatial metadata is provided by the FGDC who has defined and approved the Content Standard for Digital Geographic Metadata (CSDGM) FGDC-STD-001-1998 [A1] Version 2 revised June 1998. This standard is the data documentation standard referenced in the executive order.

According to FGDC, the objectives of the standard are to provide a common set of terminology and definitions for the documentation of digital geospatial data. The standard establishes the names of data elements and compound elements (groups of data elements) to be used for these purposes, the definitions of these compound elements and data elements, and information about the values that are to be provided for the data elements.

The standard was developed from the perspective of defining the information required by a prospective user to address the following: the availability of a set of geospatial data, the fitness of the set of geospatial data for an intended use, the means of accessing the set of geospatial data, and to successfully transfer the set of geospatial data.

The FGDC is one of a group of standards bodies involved in the progression of standards development. A team is monitoring a harmonization process that will result in the agreement of the FGDC standard with applicable standards adopted by the American National Standards Institute and the International Standards Organization. There is no firm date set for when the harmonization process will be completed. The team will make every effort to assure consistency among the standards and communicate any impacts of that process to users of this USDA SCA standard by way of amendment.

3.   Levels of compliance

Due to the timeframe for adoption and implementation of the ISO 19115 standard, it is necessary to move forward with an implementation of a geospatial metadata standard based on the FGDC CSDGM Version 2. Thus, the Service Center Data Management Team will move forward with this standard in their implementation of a geospatial metadata repository. This will allow for effective communication and integration with other geospatial data repositories or clearinghouses and for participation in the National Spatial Data Infrastructure (NSDI) and Geospatial One-Stop programs, until the ISO standard is accepted and other metadata programs begin to migrate to the new standard.

This document defines two levels of metadata collection compliance. The Service Center Initiative minimum standard (SCI minimum) and FGDC full compliance standard. Each of these levels are depicted in Figure 1 and defined for the purposes of this document.

3.1.   FGDC full compliance

FGDC full is defined as all mandatory, mandatory-if-applicable, and optional elements that may apply. Optional metadata elements are to be determined by the data steward or data producer and included if the element is recognized as applicable.

3.2.   SCI minimum compliance

SCI minimum is considered to be the minimum mandatory metadata set to be included for all types of local geospatial data produced in SCA service centers. This core minimum may be expanded to include additional FGDC metadata elements or FGDC extended elements.

FGDC full compliance metadata includes all mandatory, mandatory-if-applicable, and optional elements required by FGDC.

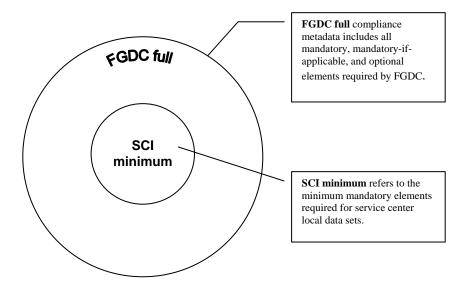**SCI minimum** refers to the minimum mandatory elements required for service center local data sets.

Figure 3.1 — Metadata Collection Levels of Compliance

The concentric rings in Figure 3.1 indicate that information inside the smaller ring is encompassed by information in the surrounding rings. For example, all metadata elements within the SCI minimum are contained within the FGDC full. This does not preclude the data producer or data steward from including additional metadata elements into data set-specific standards but does ensure that there is a core minimum, or subset, that was extracted from the FGDC full.

All data sets produced for use under the SCI are required to maintain, at a minimum the metadata elements outlined later in this document. The SCI recognizes that metadata collection efforts will vary from data set to data set, but adherence to the standards in this document ensures that all SCI data sets document these same minimum required elements. Data stewards, working in conjunction with data producers, will assist with the appropriate selection of metadata elements that will be required for their respective data sets. This flexibility allows data stewards and data producers to collect information they deem valuable to the description of the data set, therefore collecting enough information to ensure that the metadata is valuable for research and query purposes within a metadata repository or data clearinghouse environment.

3.3.   Adoption of required metadata standard

Conformance with the entire FGDC standard is reasonably complex, costly, and difficult to require. The Geospatial Metadata Team (GMT) recognizes that "The need to collect the proper amount and proper type of metadata must be balanced with the cost of collecting these properties." In other words, if the metadata requirements are too complex or burdensome, then the metadata won't be collected and therefore cannot be effectively used. Certainly, mandatory compliance with the entire FGDC full standard by all Service Center participants would be a formidable task.

Consequently, the Geospatial Metadata Team (GMT) recommends only requiring the collection and management of a core set of minimum metadata - which is "the minimum number of metadata properties that will allow for the successful sharing of metadata and data at the service center level." This minimum mandatory subset of metadata will be compliant with the FGDC

minimum and FGDC full standard in terms of its formats and element definitions but will not be fully compliant with FGDC's mandatory specifications.

Thus, the GMT has established the Standard for Geospatial Data Set Metadata (SCI Std 003-01) and requires that full compliance metadata be provided and maintained with all SCI national geospatial data sets and data sets produced for use from SCA Data Centers and State Offices. The GMT, however, recognizes the difficulty in providing full compliance metadata for data sets originating outside the SCA. Nevertheless, the GMT will encourage and support technically through the use of metadata collection and maintenance tools, the submission and maintenance of the full compliance metadata as required.

Service Center teams, currently using or involved in Geographic Information System (GIS), have been included in the review process to determine the minimum set of geospatial metadata that shall be required from an Agency perspective.

In trying to establish the minimum set of geospatial metadata, the GMT first asked basic questions about a digital data set, or map, which a user would typically want to know. Next, these "criteria" were matched to the defined metadata components and elements within the ISO standard. The information presumed of interest is:

— Where is the data (i.e., where on the surface of the earth is this data)?
— What place names are associated with the data (e.g., Larimer County)?
— What themes or layers are represented (e.g., hydrography or land use)?
— What type of data is it (e.g., vector or raster)?
— What is the quality of the data (e.g., how old is it, at what scale was it captured)?
— What coordinate system is the data in (e.g., Universal Transverse Mercator (UTM) in meters)?
— How is the data attributed (e.g., what type of tags or related tabular data are there)?
— What do the attributes mean (e.g., 777 is a perennial stream)?
— In what format is the data (e.g., .DXF or ARC/INFO®)?
— Who can tell me more about this data (e.g., who is the originator)?
— Are there any restrictions on the use or access of the data?
— Can I get the data online or in another media?

3.4.   SCI Minimum Compliance Metadata

Only a handful of the FGDC metadata elements are mandatory. The following chart lists the mandatory metadata that will be captured for all locally developed geospatial files, data sets created for rollup to national layers, and supplemental gateway or clearinghouse metadata. See section 4 for a detailed description of each element

Minimum Core Metadata for Local Geospatial Data Sets

Identification:

Originator	*Bounding Coordinates**
Title	Theme Keyword(s)
Purpose	Place Keyword(s)
Calendar Date	*Use Constraints*
Progress	Point of Contact

Data Quality Information:

Originator	Source Scale Denominator
Publication Date	Process Step
Title	

Spatial Reference Information: **Entity and Attribute Information:**
Horizontal Coordinate System Definition   **Overview Description and/or** *Detailed Description***

Distribution Information: **Metadata Reference Information:**
Distribution Liability   *Metadata Date*
Format Name   *Metadata Standard Name*
                                                Metadata Standard Version

*Italicized elements are automatically populated by metadata tools
**Applies to national layer roll-up development

Figure 3.2 — Minimum Core Metadata for Local Geospatial Data Sets

3.4.1.   Where to Store the Metadata

Metadata is stored in a separate file from the actual geospatial data.

The metadata file is given a name similar to the geospatial file that it describes, and the pair of files (i.e. the geospatial file and the metadata file) will be stored together in the same folder.

3.4.2.   Who Creates the Metadata, and When is it Created

The person who first creates the geospatial file is charged with also establishing the related metadata file. The person who updates the geospatial file is responsible for updating the metadata after each round of changes, as needed.

The metadata should be prepared as soon as a geospatial file has been saved, especially for shared files.   It is much easier to capture the metadata while the information is fresh, rather than try to reconstruct it later.

3.4.3.   How to Store Metadata

The metadata must be collected in the FGDC .xml format so that they can be stored and managed in metadata servers. However, metadata suitable for viewing can be stored as FGDC .txt or FGDC .html files. Metadata files generated by ArcCatalog will have the same name as the data

file, but with an "xml" extension. ArcCatalog metadata can be exported into more readable txt or html formats. The metadata file should be given the same prefix as the geospatial file that it describes, and the pair of files (i.e. the geospatial file and the metadata file) will be stored together in the same directory.

A useful tool for metadata management is ESRI ArcCatalog. This tool is especially useful in that it automatically extracts bounding coordinates and projection parameters for the data set. Bounding coordinates and projection parameters can be difficult to obtain unless the process is automated. Current plans are to deploy ESRI's ArcCatalog, as well as other metadata tools, to Service Centers after the Summer of 2003.

3.4.4.   Common Metadata Errors

Even though metadata tools are available for creating metadata, the task is not easy. Metadata should be planned and created as the data are being developed. Several metadata elements are difficult to understand. The FGDC and individuals across the country completed a *Ten Most Common Metadata Errors* list to help those who create metadata to do a better job. Not surprisingly, the number one error is 'Not doing it!' See this list at one of the following sites:

http://www.csc.noaa.gov/metadata/curriculum/Ten_Most_Common_Metadata_Errors_--_handout.pdf

http://www.fgdc.gov/metadata/top10metadataerrors.pdf

3.5.   SCI Minimum Metadata Example

SCI minimum metadata are to be stored in eXtensible Markup Language (XML) and text or Hyper Text Markup Language (HTML) formats. Examples can vary substantially. The following is a text example that was saved in Microsoft Word.

Identification_Information:
    Citation:
    Citation_Information:
        Originator:
        U.S. Department of Agriculture, Natural Resources Conservation Service
        Title:
        Wetlands Reserve Program (WRP) database for Wyoming
    Description:
        Purpose:
        WRP depicts information about the kinds and distribution of wetlands on
        the landscape. The data used in the WRP product were prepared by NRCS
        field office employees.

    Time_Period_of_Content:
        Time_Period_Information:
            Single_Date/Time:
                Calendar_Date: 20021030
    Status:
        Progress: Complete
    Spatial_Domain:
        Bounding_Coordinates:
            West_Bounding_Coordinate: -109.574397
            East_Bounding_Coordinate: -104.290090
            North_Bounding_Coordinate: 44.890426
            South_Bounding_Coordinate: 41.199188
    Keywords:
        Theme:
            Theme_Keyword_Thesaurus: None
            Theme_Keyword: wetlands
            Theme_Keyword: WRP
        Place:
            Place_Keyword_Thesaurus:
            Counties and County Equivalents of the States of the United States
            and the District of Columbia (FIPS Pub 6-3)
            Place_Keyword: Wyoming
    Use_Constraints:
The U.S. Department of Agriculture, Natural Resources Conservation Service,
should be acknowledged as the data source in products derived from these
data. This data set is not designed for use as a primary regulatory tool in
permitting or citing decisions, but may be used as a reference source …
    Point_of_Contact:
        Contact_Information:
            Contact_Organization_Primary:
                Contact_Organization:
                U.S. Department of Agriculture, Natural Resources
                Conservation Service

            Contact_Address:
                Address: 100 East "B" Street
                City: Casper
                State_or_Province: Wyoming
                Postal_Code: 82601

Data_Quality_Information:
    Lineage:
        Source_Information:
            Source_Citation:
                Citation_Information:
                Originator: U.S. Department of Agriculture, Natural Resources Conservation Service
                    Publication_Date: 2002
                    Title: Wetlands Reserve Program (WRP) database for Wyoming
            Source_Scale_Denominator: 20000
        Process_Step:
            Process_Description:
            The Wyoming WRP dataset was created from GPS points collected in the Fall of 2002 in order to help build a national seamless database…
        Process_Date: 2002
Spatial_Reference_Information:
    Horizontal_Coordinate_System_Definition:
        Planar:
            Grid_Coordinate_System:
                Grid_Coordinate_System_Name: Universal Transverse Mercator
                Universal_Transverse_Mercator:
                    UTM_Zone_Number: 13
                    Transverse_Mercator:
                        Scale_Factor_at_Central_Meridian: 0.9996
                        Longitude_of_Central_Meridian: -105.000000
                        Latitude_of_Projection_Origin: 0.0
                        False_Easting: 500000
                        False_Northing: 0.0
            Planar_Coordinate_Information:
                Planar_Coordinate_Encoding_Method: coordinate pair
                Coordinate_Representation:
                    Abscissa_Resolution: 0.001024
                    Ordinate_Resolution: 0.001024
                Planar_Distance_Units: meters
        Geodetic_Model:
            Horizontal_Datum_Name: North American Datum of 1983

    Ellipsoid_Name: Geodetic Reference System 80
    Semi-major_Axis: 6378137.0
    Denominator_of_Flattening_Ratio: 298.257222
Entity_and_Attribute_Information:
  Detailed_Description:
    Entity_Type:
      Entity_Type_Label: 56_wrp
       Attribute:
       Attribute_Label: FID
       Attribute_Definition: Internal feature number.
       Attribute_Definition_Source: ESRI
       Attribute_Domain_Values:
        Unrepresentable_Domain: Sequential unique whole
   numbers that are automatically generated.
       Attribute:
       Attribute_Label: Shape
       Attribute_Definition: Feature geometry.
       Attribute_Definition_Source: ESRI
       Attribute_Domain_Values:
        Unrepresentable_Domain: Coordinates defining the
   features.
       Attribute:
       Attribute_Label: AGREE_NUM
       Attribute:
       Attribute_Label: EASE_ACRES
       Attribute:
       Attribute_Label: EASE_LENGT
       Attribute:
       Attribute_Label: METHOD
       Attribute:
       Attribute_Label: STATE
       Attribute:
       Attribute_Label: SOURCETHM
       Attribute:
       Attribute_Label: AREA
       Attribute:
       Attribute_Label: PERIMETER
       Attribute:
       Attribute_Label: ACRES
       Attribute:
       Attribute_Label: ACRES Attribute_Domain_Values:
Distribution_Information:
  Distribution_Liability:
 Although these data have been processed successfully on a computer system at

the U.S. Department of Agriculture, no warranty expressed or implied is made by the Agency regarding the utility of the data on any other system, nor shall the act of distribution constitute any such warranty…

Standard_Order_Process:
      Digital_Form:
            Digital_Transfer_Information:
                  Format_Name: Shape

Metadata_Reference_Information:
      Metadata_Date: 20021030
      Metadata_Standard_Name: SCI Minimum Metadata Standard
Metadata_Standard_Version: FGDC-STD-001-1998

3.6.   FGDC Full Compliance Metadata Examples

Examples of fully populated metadata records as they appear for Service Center data sets are available at:

Orthophoto Mosaic Data Set (raster): metadata_example1.html
SSURGO Data Set (vector): metadata_example2.html
Watershed Boundary Data Set (vector): metadata_example3.html

The examples demonstrate complete metadata records for data sets generated by USDA or cooperating organizations. They can be used as a reference tool and guide for users responsible for collection, management, and maintenance of metadata. The completeness of each set varies according to the information available to the developer. The raster and vector examples are substantially different in the *Entity and Attribute* metadata element.

Section 4 defines each of the metadata elements.

4.   Full Compliance Geospatial Metadata

The standard is presented in a hierarchical format consisting of metadata elements and compound elements. The standard has seven sections used to capture information about a geospatial data set. Each section begins with a compound element that may contain several components. Compound elements are not to be populated with metadata information, but serve to define the metadata elements that fall within that particular section. The numbers to the left of each compound element and metadata element map to the numbers used in the FGDC standard.

SCI minimum compliance metadata elements are **bolded** in Tables 4.1 – 4.7.

4.1. Identification information

This section captures basic information about the geospatial data set. Information that falls within this section includes citation information, descriptive text of the data set including an abstract and purpose, and temporal information regarding the creation of the data set.

Table 4.1 — Identification Information

Element name	Definition	Domain value/example
1. Identification_Information	Basic information about the data set.	
1.1. Citation (*numbers from section 8 of FGDC standard)		
*8. Citation_Information	The recommended reference to be used for the data set.	
8.1. Originator	The name of an organization or individual that developed the data set.	Textual entry, should include the names of editors or compliers if information is available.
8.2. Publication_Date	The date when the data set is published or otherwise made available for release.	For example June, 1999.
8.4. Title	The name by which the data set is known.	For example, "Common Land Unit of Taylor, Texas".
1.2. Description	A characterization of the data set, including its intended use and limitations.	
1.2.1. Abstract	A brief narrative summary of the data set.	Example: "This data set was prepared by digitizing maps, by compiling information from a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information. The data set consists of georeferenced digital map data and computerized attribute data. This data set contains information that can be used in geospatial analysis for general planning purposes. The information can be applied to various types of site or suitability selection to aid land management decisions."
1.2.2. Purpose	A summary of the intentions with which the data set was developed.	Example: "This data set depicts information about features on or near the surface of the Earth depicting information about the distribution of the theme across the landscape. It can be used for general planning purposes in GIS analysis."
1.3. Time_Period_of_Content (*numbers from section 9 of	Time periods(s) for which the data set corresponds to the	

Element name	Definition	Domain value/example
FGDC standard)	currentness reference.	
*9. Time_Period_Information	Information about the date and time of an event. Use one of the following date recording methods: 9.1. Single_Date/Time or 9.2. Multiple_Dates/Times or 9.3. Range_of_Dates/Times	
9.1. Single_Date/Time	Means of encoding a single date and time.	
9.1.1. Calendar_Date	The year (and optionally month, or month and day).	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
OR 9.2. Multiple_Dates/Times	Means of encoding multiple individual dates and times	
9.1.1. Calendar_Date (R)	The year (and optionally month, or month and day).	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
OR 9.3. Range_of_Dates/Times	Means of encoding a range of dates and times.	
9.3.1. Beginning_Date	The first year (and optionally month, or month and day) of the event.	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
9.3.3. Ending_Date	The last year (and optionally month, or month and day) of the event.	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
1.3.2. Currentness_Reference	The basis on which the time period of content information is determined.	"publication date", "ground condition", "date of digitizing"
1.4. Status	The state of or maintenance	

Element name	Definition	Domain value/example
	information for the data set	
1.4.1. Progress	The state of the data set.	"Complete", "In Work", "Planned"
1.4.2. Maintenance_and_Update_ Frequency	The frequency with which changes and additions are made to the data set after the initial data set is completed.	"Continually", " Daily", "Weekly", "Monthly", "Annually", "Unknown", "As Needed", "Irregular", "None Planned", etc.
1.5. Spatial_Domain	The geographic area domain of the data set.	
1.5.1. Bounding_Coordinates	The limits of coverage of a data set expressed by latitude and longitude values in the order western-most, eastern-most, northern-most, and southern-most. For data sets that include a complete band of latitude around the earth, the West Bounding Coordinate shall be assigned the value –180.0 and the East Bounding Coordinate shall be assigned the value 180.0. These values will be expressed in decimal degrees.	
1.5.1.1. West_Bounding_Coordinate	Western-most coordinate of the limit of coverage expressed in longitude (decimal degrees).	-180.0 <= West Bounding Coordinate <= 180.0
1.5.1.2. East_Bounding_Coordinate	Eastern-most coordinate of the limit of coverage expressed in longitude (decimal degrees).	-180.0 <= East Bounding Coordinate <= 180.0
1.5.1.3. North_Bounding_Coordinate	Northern-most coordinate of the limit of coverage expressed latitude (decimal degrees).	–90.0 <= North Bounding Coordinate <= 90.0; North Bounding Coordinate >= South Bounding Coordinate.
1.5.1.4. South_Bounding_Coordinate	Southern-most coordinate of the limit of coverage expressed in latitude (decimal degrees).	-90.0 <= South Bounding Coordinate <= 90.0; South Bounding Coordinate <= North Bounding Coordinate
1.6. Keywords	Words or phrases summarizing an aspect of the data set.	
1.6.1. Theme	Subjects covered by the data set.	
1.6.1.1. Theme Keyword Thesaurus	Reference to a formally registered thesaurus or a similar authoritative source of theme keywords.	Free text or "None"
1.6.1.2. Theme_Keyword (R)	Common use word or phrase used to describe the subject of the data set.	See Appendix B Table B.1 for the acceptable domain values list.
1.6.2. Place	Geographic locations characterized by the data set.	
1.6.2.1. Place Keyword Thesaurus	Reference to a formally registered thesaurus or a similar authoritative source of place keywords.	Free text or "None"
1.6.2.2. Place_Keyword (R)	Geographic locations characterized by the data set.	Examples: State Name ("Virginia" or "VA"), County Name

Element name	Definition	Domain value/example
		("Frederick", "Frederick County"), State FIPS (2-digit code such as "51"), County FIPS (3-digit code, such as "069"), Quadrangle name ("Round Hill "), Quadrangle code (such as "O36078h7"), or OIP name, or OIP number (4-digit code).
1.7. Access_Constraints	Restrictions and legal prerequisites for accessing the data set. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the data set.	Generally, NRCS/FSA will use "None" as the domain value.
1.8. Use_Constraints	Restrictions and legal prerequisites for using the data set after access is granted. These include any use constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on using the data set.	Example: "The U.S. Department of Agriculture, Natural Resources Conservation Service (or Aerial Photography Field Office or Farm Service Agency as appropriate), should be acknowledged as the data source in products derived from these data." "The data set is not designed for use as a primary regulatory tool permitting or citing decisions, but may be used as a reference source. This is public information and may be interpreted by organizations, agencies, units of government, or others based on needs; however, they are responsible for the appropriate application." "Photographic or digital enlargement of these maps to scales greater than at which they were originally mapped can cause misinterpretation of the data. These data and their interpretations are intended for planning purposes only".
1.9. Point_of_Contact (*numbers from section 10 of FGDC standard)	Contact information for an individual or organization that is knowledgeable about this data set. In most cases this may be the data steward.	
*10. Contact_Information	Identity of, and means to communicate with, person(s) and organization(s) associated with the data set. Use either the contact person or contact organization.	

Element name	Definition	Domain value/example
10.1. Contact_Person_Primary	The person, and the affiliation of the person, associated with the data set. Used in cases where the association of the person to the data set is more significant than the association of the organization to the data set. Use either: 1.9.1.1.1. Contact_Person_Primary or 1.9.1.2.1. Contact_ Organization_Primary	
10.1.1. Contact_Person	The name of the individual to which to contact type applies. In many cases this may be the data steward.	For example: "John Smith"
OR 10.2. Contact_Organization_Primary	The organization, and the member of the organization, associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.	
10.1.2. Contact_Organization	The name of the organization to which the contact applies.	Examples include: "USDA NRCS", "USDA APFO", USDA FS"
10.4. Contact_Address	The address for the organization or individual.	
10.4.1. Address_Type	The information provided by the address.	"mailing", "physical", "mailing and physical"
10.4.2. Address	An address line for the address.	For example: 100 S. Main St.
10.4.3. City	The city of the address	For example: Kansas City
10.4.4. State_or_Province	The state or province of the address.	For example: MO
10.4.5. Postal_Code	The ZIP or other postal code of the address.	For example: 20002
10.4.6. Country	The country of the address.	For example: USA
10.5. Contact_Voice_Telephone	The telephone number by which individuals can speak to the organization or individual.	For example: (202)555-1212

4.2.   Data quality information

Data quality presents a general assessment of the quality of the data set. Information captured in this section includes an accuracy assessment of the horizontal and vertical position of the coordinates, the lineage, or events and parameters utilized during the construction of the data set, and information concerning the source material used to generate the data set.

Table 4.2 — Data Quality Information

Element name	Definition	Domain value/example
2. Data_Quality_Information	A general assessment of the quality of the data set.	
2.2. Logical Consistency Report	An explanation of the fidelity of the relationships in the data set and tests used. The report shall detail the tests performed and the results of the tests.	Free text.
2.3. Completeness Report	Information about omissions, selection criteria, generalization, definitions used, and other rules used to derive the data set.	Free text. For example, geometric thresholds such as minimum area or minimum width.
2.4. Positional_Accuracy	An assessment of the accuracy of the positions of spatial objects. The reported accuracy value is the cumulative result of all uncertainties, including those introduced by geodetic control coordinates, compilation, and final extraction of ground coordinate values in the spatial data.	
2.4.1. Horizontal_Positional_Accuracy	An estimate of accuracy of the horizontal positions of the spatial objects.	
2.4.1.1. Horizontal_Positional_Accuracy_ Report	An explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used. Horizontal accuracy may be recorded according to NSSADA (National Spatial Data Accuracy). Horizontal spatial accuracy is defined by circular error of a data set's horizontal coordinates at the 95% confidence level. Report NSSADA accuracy in ground units (i.e., if the data set uses metric units, report accuracy in meters. Other map accuracy standards include Root Mean Square Error (RMSE) and	An example a of domain value for a horizontal positional accuracy report follows:

"The accuracy of these digital data is based upon their compilation to base maps that meet National Map Accuracy Standards. The difference in positional accuracy between the digitized boundaries or points and the true feature locations is unknown."

Use "According to Specifications" if appropriate. |

Element name	Definition	Domain value/example
	American Society for Photogrammetry and Remote Sensing (ASPRS).	
2.4.2. Vertical_Positional_Accuracy	An estimate of accuracy of the vertical positions in the data set.	
2.4.2.1. Vertical_Positional_Accuracy_ Report	An explanation of the accuracy of the vertical coordinate measurements and a description of the tests used. Vertical accuracy may be recorded according to NSSADA (National Spatial Data Accuracy). Vertical spatial accuracy is defined by linear error of a data set's vertical coordinates at the 95% confidence level. Report NSSADA accuracy in ground units (i.e., if the data set uses metric units, report accuracy in meters.	Generally, the domain value for the vertical positional accuracy report of Service Center data will be "None".
2.5. Lineage	Information about the events, parameters, and source data which constructed the data set, and information about the responsible parties.	
2.5.1. Source_Information	List of sources and a short discussion of the information contributed by each.	
2.5.1.1. Source_Citation (*numbers from section 8 of FGDC standard)	Reference for a source data set.	
*8. Citation_Information	The recommended reference to be used for the data set.	
8.1. Originator	The name of an organization or individual that developed the data set.	Textual entry, should include the names of editors or compliers if information is available.
8.2. Publication_Date	The date when the data set is published or otherwise made available for release.	For example June, 1999.
8.4. Title	The name by which the data set is known.	For example, "Common Land Unit of Taylor, Texas".
2.5.1.2. Source_Scale_Denominator	The denominator of the representative fraction on a map.	For example, on a 1:24,000-scale map, the source scale denominator is 24000.
2.5.1.3. Type of Source Media	The medium of the source data set.	Domain: "paper" "stable-base material" "microfiche" "microfilm" "audiocassette" "chart" "filmstrip" "transparency" "videocassette" "videodisc" "videotape" "physical model" "computer program" "disc" "cartridge tape" "magnetic tape" "online" "CD-ROM" "electronic bulletin board"

Element name	Definition	Domain value/example
		"electronic mail system"
2.5.1.4. Source_Time_Period_of_Content (*numbers from section 9 of FGDC standard)	Time period(s) for which the source data set corresponds to the ground.	
*9. Time_Period_Information	Information about the date and time of an event. Use one of the following date recording methods: 9.1. Single_Date/Time or 9.2. Multiple_Dates/Times or 9.3. Range_of_Dates/Times	
9.1. Single_Date/Time	Means of encoding a single date and time.	
OR 9.2. Multiple_Dates/Times	Means of encoding multiple individual dates and times	
9.1.1. Calendar_Date (R)	The year (and optionally month, or month and day).	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
OR 9.3. Range_of_Dates/Times	Means of encoding a range of dates and times.	
9.3.1 Beginning_Date	The first year (and optionally month, or month and day) of the event.	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
9.3.3. Ending_Date	The last year (and optionally month, or month and day) of the event.	The date should conform to the following format: YYYY for year only, YYYYMMDD if month and day information is available. An example for June 10, 1999 is 19990610 or simply 1999 if only year information is available.
2.5.1.4.1. Source Currentness Reference	The basis on which the source time period of content information of the source data set is determined.	"ground condition" "publication date"
2.5.1.5. Source Citation Abbreviation	Short-form alias for the source citation.	Free text
2.5.1.6. Source Contribution	Brief statement identifying the information contributed by the source to the data set.	Free text.

Element name	Definition	Domain value/example
2.5.2. **Process Step**	Information about a single event.	
2.5.2.1. Process Description	An explanation of the event and related parameters or tolerances.	Free text.
2.5.2.3. Process Date	The date when the event was completed.	"Unknown", Incomplete" free date

4.3.   Spatial data organization information

This section identifies the methodology used to capture the geospatial data in a digital file.

Table 4.3 — Spatial Data Organization Information

Element name	Definition	Domain value/example
3. Spatial_Data_Organization_ Information	The mechanism used to represent spatial information in the data set.	
3.2. Direct_Spatial_Reference_ Method	The system of objects used to represent space in the data set.	"Point", "Vector", "Raster"

4.4.   Spatial reference information

This section details the reference system used to capture and store geospatial coordinates. Included in this clause is information concerning the definition of the coordinate system including map projection or grid coordinate system where appropriate, units of measure for the coordinates, and information concerning the geodetic model.

Table 4.4 — Spatial Reference Information

Element name	Definition	Domain value/example
4. Spatial_Reference_Information	The description of the reference frame for, and the means to encode, coordinates in the data set.	
4.1. Horizontal_Coordinate_System_ Definition	The reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies. Select one of the following two horizontal coordinate system models: Geographic or Planar	
4.1.1. Geographic	The quantities of latitude and longitude which define the position of a point on the Earth's surface with respect to a reference spheroid.	
4.1.1.1. Latitude Resolution	The minimum difference between two adjacent latitude values expressed in Geographic Coordinate Units of measure.	Real/Latitude resolution > 0.0
4.1.1.2. Longitude Resolution	The minimum difference between two adjacent longitude values expressed in Geographic Coordinate Units of measure.	Real/Longitude resolution > 0.0
4.1.1.3. Geographic_Coordinate_Units	Units of measure used for the latitude and longitude values.	"Decimal degrees", "Decimal minutes", "Decimal seconds", "Degrees and decimal minutes", "Degrees, minutes, and decimal seconds", "Radians", "Grads"
OR 4.1.2. Planar	The quantities of distances, or distances and angles, which define the position of a point on a reference plane to which the surface of the Earth has been projected.	
4.1.2.1. Map_Projection	The systematic representation of all or part of the surface of the Earth on a plane or developable surface. Select from one of the	

Element name	Definition	Domain value/example
	following two Planar systems (Map Projection or Grid Coordinate System).	
4.1.2.1.1. Map_Projection_Name	Name of the map projection.	"Albers Conical Equal Area", "Azimuthal Equidistant", "Equidistant Conic", "Equi-rectangular", "General Vertical Near-sided Projection", "Gnomonic", "Lambert Azimuthal Equal Area", "Lambert Conformal Conic", "Mercator", "Modified Stereographic for Alaska", "Miller Cylindrical", "Oblique Mercator", "Orthographic", "Polar Stereographic", "Polyconic", "Robinson", "Sinusoidal", "Space Oblique Mercator", "Stereographic", "Transverse Mercator", "van der Grinten"
(parameters below are for most common projections see FGDC standard for all others)		
4.1.2.1.9. Lambert Conformal Conic	Contains parameters for the Lambert Conformal Conic projection.	
4.1.2.1.23.1 Standard Parallel	Line of constant latitude at which the surface of the Earth and the plane or developable surface intersect.	-90<=standard parallel=>90
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.1.13 Oblique Mercator	Contains parameters for the	

Element name	Definition	Domain value/example
	Oblique Mercator projection.	
4.1.2.1.23.10 Scale Factor at Center Line	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the center line.	>0.0
4.1.2.1.23.11 Oblique Line Azimuth	Method used to describe the line along which an oblique mercator map projection is centered using the map projection origin and an azimuth.	
4.1.2.1.23.11.1 Azimuthal Angle	Angle measured clockwise form the north, and expressed in degrees.	0.0<azimuthal angle<360
4.1.2.1.23.11.2 Azimuth Measure Point Longitude	Longitude of the map projection origin.	-180<=azimuth measure point longitude<180
OR		
4.1.2.1.23.12 Oblique Line Point	Method used to describe the line along which an oblique mercator map projection is centered using two points near the limits of the mapped region that define the center line.	
4.1.2.1.23.12.1 Oblique Line Latitude	Latitude of a point defining the oblique line.	-90<=oblique line latitude<=90
4.1.2.1.23.12.2 Oblique Line Longitude	Longitude of a point defining the oblique line.	-180<=oblique line latitude<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.1.16 Polyconic	Contains parameters for the Polyconic projection.	
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a	-90<=latitude of projection origin<=90

Element name	Definition	Domain value/example
	map projection.	
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.1.21 Transverse Mercator	Contains parameters for the Transverse mercator projection.	
4.1.2.1.23.17 Scale Factor at Central Meridian	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the central meridian.	>0.0
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.2. Grid_Coordinate_System	A plane-rectangular coordinate system usually based on, and mathematically adjusted to, a map projection so that geographic positions can be readily transformed to and from plane coordinates.	

Element name	Definition	Domain value/example
4.1.2.2.1. Grid_Coordinate_System_Name	Name of the grid coordinate system. Select one of the following systems: 4.1.2.2.2. Universal_Transverse_Mercator or 4.1.2.2.4. State_Plane_Coordinate_System 1927 or 4.1.2.2.4. State Plane Coordinate System 1983	
4.1.2.2.2. Universal_Transverse_Mercator	(UTM) a grid system based on the transverse Mercator projection, applied between latitudes 84 degrees north and 80 degrees south on the Earth's surface.	
4.1.2.2.2.1. UTM_Zone_Number	Identifier for the UTM zone.	Values for the northern hemisphere fall within 1 <= UTM zone <= 60. Values for the southern hemisphere fall within -60 <= UTM zone <= -1.
4.1.2.1.21 Transverse Mercator	Contains parameters for the Transverse mercator projection.	
4.1.2.1.23.17 Scale Factor at Central Meridian	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the central meridian.	>0.0
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure	Free real

Element name	Definition	Domain value/example
	identified in Planar Coordinate Units.	
OR 4.1.2.2.4. State_Plane_Coordinate_System	(SPCS) a plane-rectangular coordinate system established for each state in the United States by the National Geodetic Survey.	
4.1.2.2.4.1. SPCS_Zone_Identifier:	Identifier for the SPCS zone.	Use the four-digit numeric codes for the SPCS zone based on the North American Datum (NAD) of 1927 or NAD 1983 depending on applicability. Include one of the following domain values: "Lambert Conformal Conic", "Transverse Mercator", "Oblique Mercator", "Polyconic".
4.1.2.1.9. Lambert Conformal Conic	Contains parameters for the Lambert Conformal Conic projection.	
4.1.2.1.23.1 Standard Parallel	Line of constant latitude at which the surface of the Earth and the plane or developable surface intersect.	-90<=standard parallel=>90
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.1.13 Oblique Mercator	Contains parameters for the Oblique Mercator projection.	
4.1.2.1.23.10 Scale Factor at Center Line	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the center	>0.0

Element name	Definition	Domain value/example
	line.	
4.1.2.1.23.11 Oblique Line Azimuth	Method used to describe the line along which an oblique mercator map projection is centered using the map projection origin and an azimuth.	
4.1.2.1.23.11.1 Azimuthal Angle	Angle measured clockwise form the north, and expressed in degrees.	0.0<azimuthal angle<360
4.1.2.1.23.11.2 Azimuth Measure Point Longitude	Longitude of the map projection origin.	-180<=azimuth measure point longitude<180
OR		
4.1.2.1.23.12 Oblique Line Point	Method used to describe the line along which an oblique mercator map projection is centered using two points near the limits of the mapped region that define the center line.	
4.1.2.1.23.12.1 Oblique Line Latitude	Latitude of a point defining the oblique line.	-90<=oblique line latitude<=90
4.1.2.1.23.12.2 Oblique Line Longitude	Longitude of a point defining the oblique line.	-180<=oblique line latitude<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.1.16 Polyconic	Contains parameters for the Polyconic projection.	
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned	Free real

Element name	Definition	Domain value/example
	to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	
4.1.2.1.23.5 False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
OR 4.1.2.1.21 Transverse Mercator	Contains parameters for the Transverse mercator projection.	
4.1.2.1.23.17 Scale Factor at Central Meridian	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the central meridian.	>0.0
4.1.2.1.23.2 Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	-180<=longitude of central meridian<180
4.1.2.1.23.3 Latitude of Projection Origin	Latitude chosen as the origin of rectangular coordinates for a map projection.	-90<=latitude of projection origin<=90
4.1.2.1.23.4 False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	Free real
4.1.2.4. Planer Coordinate Information	Info. About the coordinate system developed on the planer surface.	
4.1.2.4.1. Planer Coordinate Encoding Method	The means used to represent horizontal positions.	"coordinate pair", "distance and bearing", "row and column"
4.1.2.4.2. Coordinate Representation	the method of encoding the position of a point by measuring its distance from perpendicular reference axes (the "coordinate pair" and "row and column" methods).	
4.1.2.4.2.1. Abscissa Resolution	the (nominal) minimum distance between the "x" or column values of two adjacent points, expressed in Planar Distance Units of measure.	>0.0
4.1.2.4.2.2. Ordinate Resolution	the (nominal) minimum distance between the "y" or row values of two adjacent points, expressed in Planar Distance Units of	>0.0

Element name	Definition	Domain value/example
	measure.	
OR 4.1.2.4.3. Distance and Bearing Representation	a method of encoding the position of a point by measuring its distance and direction (azimuth angle) from another point.	
4.1.2.4.3.1. Distance Resolution	the minimum distance measurable between two points, expressed Planar Distance Units of measure	>0.0
4.1.2.4.3.2. Bearing Resolution	the minimum angle measurable between two points, expressed in Bearing Units of measure.	>0.0
4.1.2.4.3.3. Bearing Units	units of measure used for angles.	"Decimal degrees" "Decimal minutes" "Decimal seconds" "Degrees and decimal minutes" "Degrees, minutes, and decimal seconds" "Radians" "Grads"
4.1.2.4.3.4. Bearing Reference Direction	direction from which the bearing is measured.	"North" "South"
4.1.2.4.3.5. Bearing Reference Meridian	axis from which the bearing is measured.	"Assumed" "Grid" "Magnetic" "Astronomic" "Geodetic"
4.1.2.4.4. Planar_Distance_Units	Units of measure used for distances.	Examples include: "meters", "international feet", "survey feet"
4.1.4. Geodetic_Model	Parameters for the shape of the earth.	
4.1.4.1. Horizontal_Datum_Name	The identification given to the reference system used for defining the coordinates of points.	Select either "North American Datum of 1927" or "North American Datum of 1983".
4.1.4.2. Ellipsoid_Name	Identification given to established representations of the Earth's shape.	Select either "Clarke 1866" or "Geodetic Reference System 80"
4.1.4.3. Semi-Major Axis	radius of the equatorial axis of the ellipsoid.	>0.0
4.1.4.4. Denominator of Flattening Ratio	the denominator of the ratio of the difference between the equatorial and polar radii of the ellipsoid when the numerator is set to 1.	>0.0
4.2. Vertical Coordinate System Definition		
4.2.1. Altitude System Definition		

Element name	Definition	Domain value/example
4.2.1.1. Altitude Datum Name	the identification given to the surface taken as the surface of reference from which altitudes are measured.	"National Geodetic Vertical Datum of 1929" "North American Vertical Datum of 1988"
4.2.1.2. Altitude Resolution	the minimum distance possible between two adjacent altitude values, expressed in Altitude Distance Units of measure.	>0.0
4.2.1.3. Altitude Distance Units	units in which altitudes are recorded.	"meters" "feet"
4.2.1.4. Altitude Encoding Method	the means used to encode the altitudes.	"Explicit elevation coordinate included with horizontal coordinates" "Implicit coordinate" "Attribute values"
4.2.2. Depth System Definition		
4.2.2.1. Depth Datum Name	the identification given to surface of reference from which depths are measured.	"Local surface" "Chart datum; datum for sounding reduction" "Lowest astronomical tide" "Highest astronomical tide" "Mean low water" "Mean high water" "Mean sea level" "Land survey datum" "Mean low water springs" "Mean high water springs" "Mean low water water neap" "Mean lower low water" "Mean lower low water springs" "Mean higher high water" "Mean higher low water" "Mean lower high water" "Spring tide" "Tropic lower low water" "Neap tide" "High water" "Higher high water" "Low water" neap "Mean high "Low-water datum" "Lowest low water" "Lower low water" "Lowest normal low water" "Mean tide level"

Element name	Definition	Domain value/example
		"Indian spring low water" "High-water full and charge" "Low-water full and charge" "Columbia River datum" "Gulf Coast low water datum" "Equatorial springs low water" "Approximate lowest astronomical tide" "No correction"
4.2.2.2. Depth Resolution	the minimum distance possible between two adjacent depth values, expressed in Depth Distance Units of measure.	>0.0
4.2.2.3. Depth Distance Units	units in which depths are recorded.	"meters" "feet
4.2.2.4. Depth Encoding Method	the means used to encode depths.	"Explicit depth coordinate included with horizontal coordinates" "Implicit coordinate" "Attribute values"

4.5.   Entity and attribute information

This section documents the composition of the data set including information concerning the delineation of features and the characteristics (attributes) of those features. Included in this description are the names of the attributes and the codes, if any used to store the attribute values in the database. Additional information concerning the complete description of the data and its associated attributes is provided in this section.

Table 4.5 — Entity and Attribute Information

Element name	Definition	Domain value/example
5. Entity_and_Attribute_ Information	Details about the information content of the data set, including the entity types, their attributes, and the domains from which attribute values may be assigned.	
5.1. Detailed Description		
5.1.1. Entity Type	the definition and description of a set into which similar entity instances are classified.	
5.1.1.1 Entity Type Label	the name of the entity type.	Free text
5.1.1.2. Entity Type Definition	the description of the entity type.	Free text
5.1.1.3. Entity Type Definition Source	the authority of the definition.	Free text
5.1.2. Attribute (R)	a defined characteristic of an entity.	
5.1.2.1. Attribute Label	the name of the attribute.	Free text
5.1.2.2. Attribute Definition	the description of the attribute.	Free text
5.1.2.3. Attribute Definition Source	the authority of the definition.	Free text
5.1.2.4. Attribute Domain Values	the valid values that can be assigned for an attribute.	
5.1.2.4.1. Enumerated Domain	the members of an established set of valid values.	
5.1.2.4.1.1. Enumerated Domain Value	the name or label of a member of the set.	Free text
5.1.2.4.1.2. Enumerated Domain Value Definition	the description of the value.	Free text
5.1.2.4.1.3. Enumerated Domain Value Definition Source	the authority of the definition.	Free text
OR 5.1.2.4.2. Range Domain	the minimum and maximum values of a continuum of valid values.	
5.1.2.4.2.1. Range domain Minimum	the least value that the attribute can be assigned.	Free text
5.1.2.4.2.2. Range Domain Maximum	the greatest value that the attribute can be assigned.	Free text
5.1.2.4.2.3. Attribute Units of Measure	the standard of measurement for an attribute value.	Free text
OR 5.1.2.4.3. Codeset Domain	reference to a standard or list which contains the members of an established set of valid values.	

Element name	Definition	Domain value/example
5.1.2.4.3.1. Codeset Name	the title of the codeset.	Free text
5.1.2.4.3.2. Codeset Source	the authority for the codeset.	Free text
OR 5.1.2.4.4. Unrepresentable Domain	description of the values and reasons why they cannot be represented.	Free text
AND/OR 5.2. Overview_Description	Summary of and citation to detailed description of, the information content of the data set.	
5.2.1. Entity_and_Attribute_Overview (R)	Detailed summary of the information contained in a data set.	Textual description of attributes. For example: taxclass (taxonomic classification) - stores the taxonomic classification for soils in the database.
5.2.2. Entity_and_Attribute_Detail_ Citation (R)	Reference to the complete description of the entity types, attributes, and attribute values for the data set.	Textural reference to where the complete descriptions may be found. U.S. Department of Agriculture. 1975. Soil Taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conservation Service, U.S. Department of Agriculture Handbook 436.

4.6. Distribution information

This section details information concerning the accessibility and distribution of the data set. Metadata elements capture the person or organization responsible for releasing the data set, the contact information for that person or organization, and information concerning the available methods of distribution.

Table 4.6 — Distribution Information

Element name	Definition	Domain value/example
6. Distribution_Information	Information about the distributor of and options for obtaining the data set.	
6.1. Distributor (*numbers from section 10 of FGDC standard)	The party from whom the data set may be obtained.	
*10. Contact_Information	Identity of, and means to communicate with, person(s) and organization(s) associated with the data set. Use either the contact person or contact organization.	
10.2. Contact_Organization_Primary	The organization, and the member of the organization, associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.	
10.1.2. Contact_Organization	The name of the organization to which the contact applies.	Examples include: "USDA NRCS", "USDA APFO", USDA FS"
10.4. Contact_Address	The address for the organization or individual.	
10.4.1. Address_Type	The information provided by the address.	"mailing", "physical", "mailing and physical"
10.4.2. Address	An address line for the address.	For example: 100 S. Main St.
10.4.3. City	The city of the address	For example: Kansas City
10.4.4. State_or_Province	The state or province of the address.	For example: MO
10.4.5. Postal_Code	The ZIP or other postal code of the address.	For example: 20002
10.4.6. Country	The country of the address.	For example: USA
10.5. Contact_Voice_Telephone	The telephone number by which individuals can speak to the organization or individual.	For example: (202)555-1212
6.2. Resource Description	The identifier by which the distributor knows the data set.	Free Text
6.3. Distribution Liability	Statement of the liability assumed by the distributor.	Free Text
6.4. Standard_Order_Process	The common ways in which the data set may be obtained or	

Element name	Definition	Domain value/example
	received, and related instructions and fee information.	
6.4.1. Non-digital Form	The description for options for obtaining the dataset on non-computer compatible media.	Free Text
OR 6.4.2. Digital_Form	The description of options for obtaining the data set on computer-compatible media.	
6.4.2.1. Digital_Transfer_Information	Description of the form of the data to be distributed.	
6.4.2.1.1. Format_Name	The name of the data transfer format.	See Appendix B Table B.2 for acceptable domain values list.
6.4.2.1.6. File Decompression Technique	recommendations of algorithms or processes (including means of obtaining these algorithms or processes) that can be applied to read or expand data sets to which data compression techniques have been applied.	"No compression applied" free text
6.4.2.2. Digital_Transfer_Option	The means and media by which a data set is obtained from the distributor.	
6.4.2.2.1. Online_Option	Information required to directly obtain the data set electronically.	
6.4.2.2.1.1. Computer_Contact_Information	Instructions for establishing communications with the distribution computer.	
6.4.2.2.1.1.1. Network_Address	The electronic address from which the data set can be obtained from the distribution computer.	
6.4.2.2.1.1.1.1. Network_Resource_Name	The name of the file or service from which the data set can be obtained. Include URL path and filename.	For example: http://www.usda.gov/soils.e00
OR 6.4.2.2.2. Offline_Option	Information about the media-specific options for receiving the data set.	
6.4.2.2.2.1. Offline_Media	Name of the media on which the data set can be received.	"CD-ROM", "3-1/2 inch floppy disk", "9-track tape", "4 mm cartridge tape", 8 mm cartridge tape", "1/4-inch cartridge tape"
6.4.2.2.2.2. Recording Capacity	The density of information to which data are written used in cases where different recording capacities are possible.	
6.4.2.2.2.2.1. Recording Density		
6.4.2.2.2.2.2. Recording Density Units		
6.4.2.2.2.3. Recording Format	The options available or method used to write the data set to the medium.	"cpio", "tar", "High Sierra", "ISO 9660", "ISO 9660 with Rock Ridge extensions", "ISO 9660 with Apple HFS extensions" free text

Element name	Definition	Domain value/example
6.4.3. Fees	The fees and terms for retrieving the data set.	Free Text
6.5. Custom Order Process	Description of custom distribution services available, and the terms and conditions for obtaining these services.	Free Text

4.7.   Metadata reference information

This section details information concerning the currentness of the metadata record and the
standard that was used to capture this information.

Table 4.7 — Metadata Reference Information

Element name	Definition	Domain value/example
7. Metadata_Reference_Information	Information on the currentness of the metadata information, and the responsible party.	
7.1. Metadata_Date	The date that the metadata were created or last updated.	For example: "Last updated on 19990610"
7.4. Metadata Contact (*numbers from section 10 of FGDC standard)	The party responsible for the metadata information.	
*10. Contact_Information	Identity of, and means to communicate with, person(s) and organization(s) associated with the data set. Use either the contact person or contact organization.	
10.2. Contact_Organization_Primary	The organization, and the member of the organization, associated with the data set. Used in cases where the association of the organization to the data set is more significant than the association of the person to the data set.	
10.1.2. Contact_Organization	The name of the organization to which the contact applies.	Examples include: "USDA NRCS", "USDA APFO", USDA FS"
10.4. Contact_Address	The address for the organization or individual.	
10.4.1. Address_Type	The information provided by the address.	"mailing", "physical", "mailing and physical"
10.4.2. Address	An address line for the address.	For example: 100 S. Main St.
10.4.3. City	The city of the address	For example: Kansas City
10.4.4. State_or_Province	The state or province of the address.	For example: MO
10.4.5. Postal_Code	The ZIP or other postal code of the address.	For example: 20002
10.4.6. Country	The country of the address.	For example: USA
10.5. Contact_Voice_Telephone	The telephone number by which individuals can speak to the organization or individual.	For example: (202)555-1212
7.5. Metadata_Standard_Name	The name of the metadata standard used to document the data set.	Example: "FGDC Version 2.0 – USDA Service Center Metadata Standard 1.0"
7.6. Metadata Standard Version	Identification of the version of	Free Text

Element name	Definition	Domain value/example
	the metadata standard used to document the data set.	

Appendix A − Bibliography

When the following standards are superseded by an approved revision, the revision shall apply.

[A1]   FGDC-STD-001-1998, Federal Geographic Data Committee. Content standard for digital geospatial metadata (revised June 1998). Federal Geographic Data Committee. Washington, D.C.

[A2]   FGDC/ISO Metadata Standard Harmonization, April 2003. Federal Geographic Data Committee. Washington, D.C.

[A3]   SCMI Std 004, Standard for Geospatial Dataset File Naming, May 2003.

[A4}   Ten Most Common Metadata Errors, September 2000. Federal Geographic Data Committee (FGDC) Metadata Education Program and the National Metadata Cadré.

Appendix B – Domain Value Tables

Table B.1 — Theme Keyword Domain Values

Theme	Keywords
Air Quality	
Cadastral	PLSS
Census	demographics
Climate/ Precipitation	Precip., PRISM
Climate/ Temperature	Temp, PRISM
Common Land Unit	CLU
Conservation Practices	
Cultural Resources	
Disaster Events	
Ecological	
Elevation	NED, DEM
Endangered Habitat	
Environmental Easements	WRP
Geographic Names	GNIS
Geology	
Government Units	GU
Hazard Site	
Hydrography	Streams, lakes, wells, FEMA
Hydrologic Units	HU, HUC, WBD
Imagery	
Land Site	
Land Use Land Cover	LU LC, LU/LC
Map Indexes	Quad, DRG
Measurement Services	
Ortho Imagery	DOQ, DOQQ
Public Utilities	
Soils	SSURGO
Topographic Images	DRG
Transportation	Roads, railroads
Wetlands	NWI
Wildlife	
Zoning	

Table B.2 — Format Name Domain Values

Domain value	Definition
ARCE	ARC/INFO Export format
ARCG	ARC/INFO Generate format
ASCII	ASCII file, formatted for text attributes, declared format
BIL	Imagery, band interleaved by line
BIP	Imagery, band interleaved by pixel
BSQ	Imagery, band interleaved sequential
CDF	Common Data Format
CFF	Cartographic Feature File (U.S. Forest Service)
COORD	User-created coordinate file, declared format
COVERAGE	ARC/INFO Coverage
DEM	Digital Elevation Model format (U.S. Geological Survey)
DFAD	Digital Feature Analysis Data (National Imagery and Mapping Agency)
DGN	Microstation format (Intergraph Corporation)
DIGEST	Digital Geographic Information Exchange Standard
DLG	Digital Line Graph (U.S. Geological Survey)
DTED	Digital Terrain Elevation Data (MIL-D-89020)
DWG	AutoCAD Drawing format
DX90	Data Exchange '90
DXF	AutoCAD Drawing Exchange Format
ERDAS	ERDAS image files (ERDAS Corporation)
ECW	Enhanced Compressed Wavelet
GEODATABASE	ArcMap geodatabase
GRASS	Geographic Resources Analysis Support System
GRID	ARC/INFO Grid
HDF	Hierarchical Data Format
IGDS	Interactive Graphic Design System format (Intergraph Corporation)
IGES	Initial Graphics Exchange Standard
MrSID	Multi-resolution Seamless Image Database
MOSS	Multiple Overlay Statistical System export file
netCDF	network Common Data Format
NITF	National Imagery Transfer Format
RPF	Raster Product Format
RVC	Raster Vector Converted format (MicroImages)
RVF	Raster Vector Format (MicroImages)
SDTS	Spatial Data Transfer Standard (Federal Information Processing Standard 173)
SHAPE	ArcView shape file.
SIF	Standard Interchange Format (DOD Project 2851)
SLF	Standard Linear Format
TIFF	Tagged Image File Format
TGRLN	Topologically Integrated Geographic Encoding and Referencing (TIGER) Line Format
VPF	Vector Product Format (National Imagery and Mapping Agency")